

### **Examiner's Amendment**

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Attorney Keith Tacket on 11/05/2009.

Claims 23 to 33 are pending.

### ***Allowance***

The following is an examiner's statement of reasons for allowance:

Applicant claims a method of producing a core shell particle by preparing a porous template encapsulated with a primer layer and alternately charged polyelectrolyte layers or nanoparticles. The primer layer closes the pores and is impermeable to the coating materials. The pores are 0.3 to 100 nm and the particles are 100 nm to 100  $\mu$ m. Porous templates are prepared in solution wherein the adsorption of the active compound is mediated by an auxiliary and a change in the pH.

US patent application publication 2004/0142341 (Publication date: 07/22/2004; Filing date: 04/02/2002), hereafter referred to as the '341 publication, teaches a process of producing porous particles ('341, page 9, claim 17) with an intermediate layer of alternating charged electrolytes ('341, page 9, claim 20) and an outer lipid layer wherein the lipid layer is an impermeable layer which covers the pores ('341, page 2, paragraph 13), the pores are spiked with an active compound such as protein or DNA ('341, page 9, claims 20) , and the particles comprise a silicate ('341, page 4, paragraph 35 and page 10, claim 28) (limitations in claims 23, 25, 28, and 30). The particle size ranges from about 1  $\mu$ m to about 100  $\mu$ m and the pore size ranges from about 1 nm to about 1000 nm ('341, page 4, paragraphs 31-32) (limitations in claims 23, 24, 26, and 27). The '341 publication provides for functionally modifies surfaces as intermediates (i.e. auxiliaries) to facilitate adsorption ('341, page 3, paragraph 22) (limitations in instant

Art Unit: 1619

claim 29). The prior art teachings of '341 publication differ from the claimed invention as follows: the '341 publication teaches the polyelectrolyte layer applied on the porous template with the lipid layer as the exterior coating. As such, the '341 publication does not teach a primer layer (i.e. interior layer) encapsulating the template followed by application of alternating polyelectrolyte layers on the exterior. Layer-by-layer application of alternatively charged polyelectrolytes to the surface of a template is well known to one of ordinary skill in the art but application of a primer layer before application of the alternately charge polyelectrolyte layers is absent in the art. Further, application of layer that encapsulates pores without substantially entering the pore and results in a layer impermeable to consecutive polyelectrolyte layers is also absent in the prior art.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### ***Rejoinder***

Claims 23 to 33 are directed to an allowable process. Pursuant to the procedures set forth in MPEP § 821.04(a), claims 34 to 43, directed to a product made by an allowable method wherein the product is also allowable and to the process of using a product made by an allowable method, previously withdrawn from consideration as a result of a restriction requirement, are hereby rejoined and fully examined for patentability under 37 CFR 1.104.

Because all claims previously withdrawn from consideration under 37 CFR 1.142 have been rejoined, **the restriction requirement as set forth in the Office action mailed on 02/03/2009 is hereby withdrawn.** In view of the withdrawal of the restriction requirement as to the rejoined inventions, applicant(s) are advised that if any claim presented in a continuation or divisional application is anticipated by, or includes all the limitations of, a claim that is allowable in the present application, such claim may be subject to provisional statutory and/or nonstatutory double patenting rejections over the

Art Unit: 1619

claims of the instant application. Once the restriction requirement is withdrawn, the provisions of 35 U.S.C. 121 are no longer applicable. See *In re Ziegler*, 443 F.2d 1211, 1215, 170 USPQ 129, 131-32 (CCPA 1971). See also MPEP § 804.01.

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Authorization for this examiner's amendment was given in a telephone interview with Attorney Keith Tackett on 11/05/2009.

As per the rejoinder discussed *supra*, cancelled claims 34 to 43 are rejoined and renumbered:

44. A core-shell (CS) particle having: a diameter of less than 100  $\mu\text{m}$ ; a porous core in which at least one active compound is adsorbed; a primer layer which surrounds the porous core; and a capsule shell comprising a number of layers alternately charged polyelectrolyte and/or nanoparticle layers, wherein the primer layer comprises a material which closes pores of the porous core and is largely impermeable to the layers of the capsule shell.

45. The CS particle as claimed in claim 44, wherein the pores of the porous core have a pore width of 0.3 nm - 100 nm and preferably of 1 nm - 30 nm.

46. The CS particle as claimed in claim 44, wherein the core comprises a porous organic and/or inorganic microparticle having a diameter less than 100  $\mu\text{m}$ .

47. The CS particle as claimed in claim 44, wherein the core comprises at least one of a porous silica particle, a porous zeolite particle, and a porous polystyrene particle.

48. The CS particle as claimed in claim 44, wherein the core comprises a porous silica particle ranging in size from 100 nm to 100  $\mu\text{m}$  and preferably from 500 nm to 30  $\mu\text{m}$ .

49. The CS particle as claimed in claim 44, wherein the core comprises a porous zeolite particle having a pore width of 0.3 nm to 10 nm.

Art Unit: 1619

50. The CS particle as claimed in claim 44, wherein the at least one active compound comprises at least one of a protein, a polymer, an enzyme, a catalyst, a dye, and a nanoparticle.

51. A microcapsule having: a diameter of less than 100  $\mu\text{m}$ ; a capsule shell comprising a number of layers of alternately charged polyelectrolyte and/or nanoparticle layers; a primer layer on the inside of the capsule shell; and an inner framework of polyelectrolyte complexes and/or polyelectrolyte/nanoparticle complexes, which is surrounded by the primer layer and the capsule shell.

52. The microcapsule as claimed in claim 51, wherein the primer layer and the capsule shell comprise different materials.

53. A method for the production of microcapsules, comprising: preparing at least one porous template, the template being a porous organic and/or inorganic microparticle having a diameter of less than 100  $\mu\text{m}$ ; coating the surface of pores of the porous template with a number of layers of alternately charged poly-electrolytes and nanoparticles. applying at least one primer layer to the porous template; forming a capsule shell around the porous template provided with the primer layer by applying coating materials comprising at least one of alternately charged poly-electrolyte and nanoparticle layers to the porous template, the primer layer being formed from a material which closes the pores of the porous template and is largely impermeable to the coating materials applied during the formation of the capsule shell; and dissolving the porous template.

***Conclusion***

Claims 23 to 33 and 44 to 53 are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to RAYMOND P. YEAGER whose telephone number is (571) 270-7681. The examiner can normally be reached on Mon - Thurs 8:00 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yvonne Eyler can be reached on (571) 272-0871. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

R.P.Y.

/Jean C. Witz/

Primary Examiner, Art Unit 1619